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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/634,010

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Ralph N. Wall

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8791

7590

10/19/2004

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EXAMINER

HASAN, MOHAMMED A

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/634,010

Applicant(s)

WALL ET AL.

Examiner

Mohammed Hasan

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4 - 10, 12, 13, 16 - 20, 22 - 25, and 27 - 34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4 - 10, 12, 13, 16 - 20, 22 - 25, and 27 - 34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 30 – 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim subject matter which applicant regards as the invention.

Regarding claims 30 – 34, the use of the term “ first” in reference to dielectric layer. There has not been set forth a second dielectric layer.

Claims 4 – 10, 12, 13, 16 – 20, 22 – 25, and 27 - 29 that depend from independent claims 30 – 34, therefore rendered indefinite.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 – 10, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eynon et al (3,585,461) in view of Miura et al (6,242,792 B1).

Regarding claim 30, Eynon discloses (refer to figure 2) a refractory metal reflector (16), the refractory metal comprising tungsten (W), molybdenum (Mo), tantalum (Ta), Rhenium (Re), and /or Niobium (Nb) a dielectric layer (18) over the reflector (column 2, lines 15 – 55). Eynon discloses all of the limitations except a thin film resistor formed over the dielectric layer. However, Miura et al discloses (refer to figure 1) a thin film resistor 3 (column 6, line 40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a thin film resistor in to the Eynon a semiconductor device for the purpose of laser-trimmed with a high degree of precision without precise control of a height of a top portion as taught by Miura et al (column 3, lines 10 – 15).

Regarding claim 4, Miura et al discloses, laser energy used to laser trimming thin film resistor (3) (column 3, lines 10 – 15).

Regarding claim 5, Eynon et al discloses dielectric layer (18) is a pre-determined thickness range, which optimizes the laser trimming of thin film resistor (column 2, line 42).

Regarding claim 6, Eynon et al discloses dielectric layer (18) comprises silicon dioxide (SiO_2) (column 2, lines 42 – 46).

Regarding claim 7, Miura et al discloses thin film resistor comprises chromium silicon (CrSi), nickel chromium (NiCr) and or tantalum nitride (Ta₃N₅) (column 6, line 40).

Regarding claim 8, Eynon et al discloses (refer to figure 2) a dielectric layer (18) (column 2, line 42).

Regarding claim 9, Eynon et al discloses a dielectric layer (18) is a pre-determined thickness range, which optimizes the laser trimming of thin film resistor (column 2, line 42).

Regarding claim 10, Eynon et al discloses a dielectric layer comprises silicon dioxide (SiO_2) (column 2, lines 42- 46).

3. Claims 12, 13, 31, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eynon et al (3,585,461), Miura et al (6,242,792 B1) further in view of Demir et al (6,680,791 B2).

Regarding claim 31, Eynon discloses (refer to figure 2) a refractory metal reflector (16), a dielectric layer (18) over the reflector (column 2, lines 15 – 55). Miura et al discloses (refer to figure 1) a thin film resistor 3 (column 6, line 40). Eynon and Miura disclose all of the claim limitations except a metal – insulator – metal capacitor. However, Demir et al discloses (refer to figure 2) a low capacitance C (column 6, line 50 – 51).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a low capacitance C in to the Eynon a semiconductor device for the purpose of minimizing a net charge flow from the device as taught by Demir et al (column 4, lines 47 – 48).

Regarding claim 12, Demir et al discloses, wherein a plate of MIM capacitor (i.e., a low capacitance C_d) is the same layer as that of reflector (column 6, line 20 – 21).

Regarding claim 13, Demir et al discloses, wherein the plate comprises an upper plate of MIM capacitor (i.e., a low capacitance C_d) (column 6, line 20 – 21).

Regarding claim 34, Eynon discloses (refer to figure 2) a refractory metal reflector (16), a dielectric layer (18) over the reflector (column 2, lines 15 – 55). Miura et al discloses (refer to figure 1) a thin film resistor 3 (column 6, line 40). Eynon and Miura disclose all of the claim limitations except a metal – insulator – metal capacitor. However, Demir et al discloses (refer to figure 2) a low capacitance C (column 6, line 50 – 51).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a low capacitance C in to the Eynon a semiconductor device for the purpose of minimizing a net charge flow from the device as taught by Demir et al (column 4, lines 47 – 48).

4. Claims 16 – 20, 32, 22 – 25, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eynon et al (3,585,461), Miura et al (6,242,792 B1) in view of Bailey et al (US 2002/0102806 A1).

Regarding claim 32, Eynon discloses (refer to figure 2) a refractory metal reflector (16), a dielectric layer (18) over the reflector (column 2, lines 15 – 55). Eynon discloses all of the limitations except a thin film resistor formed over the dielectric layer forming a mask layer over reflective layer. However, Bailey et al discloses (refer to figure 1) a mask layer 70 (paragraph 0018).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a thin film resistor and a mask layer in to the Eynon a semiconductor device for the purpose of integrated circuit is the resistive ladder network

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in analog-to – digital converter and current limiting as taught by Bailey et al (paragraph 0002).

Regarding claim 16, Eynon et al discloses (refer to figure 2) reflector comprises a refractory metal (column 2, lines 52 - 55).

Regarding claim 17, Eynon et al discloses, a refractory metal comprises tungsten (w), molybdenum (Mo), tantalum (Ta), Rhenium (Re), and /or Niobium (Nb) and a metal – insulator-metal (MIM) capacitor (column 2, lines 15 – 55).

Regarding claim 18, Miura et al discloses, laser energy used to laser trimming thin film resistor, wherein reflector substantially reflects the laser energy towards thin film resistor (column 3, lines 10 - 15).

Regarding claim 19, Eynon et al discloses a dielectric layer (18) is a pre-determined thickness range, which optimizes the laser trimming of thin film resistor (column 2, lines 15 - 55).

Regarding claim 20, Eynon et al discloses a dielectric layer (18) comprises silicon dioxide (SiO_2) (column 2, lines 42- 46).

Regarding claim 33, Eynon discloses (refer to figure 2) a refractory metal reflector (16), a dielectric layer (18) over the reflector (column 2, lines 15 – 55). Miura et al discloses (refer to figure 3A) a thin film resistor 3 (column 7, lines 24 – 28). Eynon et al, and Miura et al disclose all of the limitations except a mask layer over reflective layer. However, Bailey et al discloses (refer to figure 1) a mask layer 70 (paragraph 0018).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a mask layer in to the Eynon a semiconductor device for the purpose of integrated circuit is the resistive ladder network in analog-to – digital converter and current limiting as taught by Bailey et al (paragraph 0002).

Regarding claim 22, Miura et al discloses thin film resistor comprises chromium silicon (CrSi), nickel chromium (NiCr) and or tantalum nitride (TaN) (column 6, line 40).

Regarding claim 23, Eynon et al discloses (refer to figure 2) a dielectric layer (18) (column 2, lines 15 - 55).

Regarding claim 24, Eynon et al discloses a dielectric layer (18) is a pre-determined thickness range, which optimizes the laser trimming of thin film resistor (paragraph 0175) (column 2, lines 15 - 55).

Regarding claim 25, Eynon et al discloses, a dielectric layer (18) comprises silicon dioxide (SiO₂) (column 2, lines 42- 46).

Allowable Subject Matter

5. Claims 27 – 29 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show two capacitors plate and forming an insulating a layer between the two capacitors.

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7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The closest prior art

Okura et al (US 2002/0126265 A1) discloses, a metal film and metal film-coated member, metal oxide film – coated member and a thin film forming apparatus and thin film forming method for producing metal film and metal oxide film.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (571) 272-2331. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272- 2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Georgia Epps
Supervisory Patent Examiner
Technology Center 2800

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